

What is claimed is:

1. A molded lens used in an optical pickup device, comprising:

(a) a plane of incidence having a first optical surface;

(b) a plane of emergence having a second optical surface provided on an opposite side of the plane of incidence; and

(c) an outer circumference surface having a shape formed by a first straight line portion which is in parallel substantially with a plane including an optical axis of the molded lens, a second straight line portion which is in parallel with the first straight line portion and is symmetric with the first straight line portion about the plane of incidence and by two circular arcs each connecting end portions of the first and second straight line portions,

wherein a part of a fringe of each of the first and second optical surfaces each which is substantially in a form of a circle whose center is on the optical axis, is cut off by each of the first and second straight line portions.

2. The molded lens of claim 1, wherein the following numerical expressions are satisfied,

$$R1 = R2 \text{ and } 1 < H/R1 < 2$$

where R1 and R2 represent radiuses of curvature of the two circular arc portions respectively, and H represents a distance between peripheral portions of the first and second optical surfaces.

3. The molded lens of claim 1, wherein the following numerical expressions are satisfied,

$$R1 = R2, 1 < H1/R1 < 2 \text{ and } |H1 - H2| \geq 0.1$$

where R1 and R2 represent radiuses of curvature of the two circular arc portions respectively, H1 represents a distance between fringe portions of the first optical surface, and H2 represents a distance between fringe portions of the second optical surface.

4. A molded lens used in an optical pickup device, comprising:

(a) a plane of incidence having a first optical surface;

(b) a plane of emergence having a second optical surface provided on an opposite side of the plane of incidence; and

(c) an outer circumference surface having a shape formed by a first straight line portion which is in parallel substantially with a plane including an optical axis of the molded lens, a second straight line portion which is in parallel with the first straight line portion and is symmetric with the first straight line portion about the plane of incidence and by two circular arcs each connecting end portions of the first and second straight line portions,

wherein the following numerical expressions are satisfied,

$$R1 = R2 \text{ and } 1 < H/R1 < 2$$

where R1 and R2 represent radiuses of curvature of the two circular arc portions respectively, and H represents a distance between the first straight line portion and the second straight line portion.

5. A molded lens used in an optical pickup device, comprising:

(a) a plane of incidence having a first optical surface;

(b) a plane of emergence having a second optical surface provided on an opposite side of the plane of incidence; and

(c) an outer circumference surface having a shape formed by a first straight line portion which is in parallel substantially with a plane including an optical axis of the molded lens, a second straight line portion which is in parallel with the first straight line portion and is symmetric with the first straight line portion about the plane of incidence and by two circular arcs each connecting end portions of the first and second straight line portions,

wherein a flash that is caused when melted resins enter an air vent port provided in a molding die cavity and are solidified in the course of manufacturing the molded lens through injection molding is formed to be projected from a side of at least one of the two circular arc portions, and the flash does not project from a tangent line that passes through a point of intersection where an imaginary straight line that passes through and crosses at right angles the optical axis and extends in a direction which is in parallel with the first and second straight line portions crosses a circular arc portion.

6. The molded lens of claim 5, wherein a length of the flash in a direction of the optical axis is 0.03 mm or less.

7. The molded lens of claim 5, wherein the flash is formed on the circular arc portion on one side of the two circular arc portions.

8. A molding die for molding a molded lens which is described in claim 5, comprising

(a) a first molding die for molding a portion including the plane of incidence of the molded lens; and

(b) a second molding die for molding a portion including the plane of emergence of the molded lens,

wherein an air vent port is formed on either one of the first and second molding dies.

9. A molded lens for an optical pickup device, comprising:

(a) a plane of incidence having a first optical surface;

(b) a plane of emergence having a second optical surface provided on an opposite side of the plane of incidence; and

(c) a flange portion that covers a periphery of the plane of incidence and that of the plane of emergence,

wherein either one of the surface of the flange portion on the side of the plane of incidence and the surface of the flange portion on the side of the plane of emergence is made to be a reference surface used for positioning a molded lens, the reference surface is formed to be projected from the plane of incidence or the plane of emergence in an optical axis direction of the molded lens, a molded lens molding die for manufacturing the molded lens having a sleeve and a core that moves in the optical axis direction relatively with the sleeve to push the molded lens out of the molding dye while the core keeps touching the molded lens after injection molding, and a flash generated when melted resins enter a vacant space that is formed on a contact portion between the sleeve and the core and are solidified, in the course of manufacturing the molded lens through injection molding, projects in the optical axis direction from the periphery of the plane of incidence or the plane of emergence and does not project in the optical axis direction from the reference surface.

10. A molding die for molded lens for molding the molded lens described in claim 9, comprising:

(a) a first molding die for molding the portion including the plane of incidence of the molded lens; and

(b) a second molding die for molding the portion including the plane of emergence of the molded lens, and either one of the first and second molding dies comprising the sleeve and the core.